α Wolf

Chair's Prerogative Exhibit

Contact
Bill Tomlinson
Synthetic Characters Group
The Media Lab
Massachusetts Institute
of Technology
20 Ames Street
Cambridge, Massachusetts 02139
USA
+1.617.253.5109
+1.617.253.6215 fax
badger@media.mit.edu

Collaborators
Bill Tomlinson
Marc Downie
Matt Berlin
Jesse Gray
Adolph Wong
Robert Burke
Damian Isla
Yuri Ivanov
Michael Patrick Johnson
Derek Lyons
Jennie Cochran
Bryan Yong
Dan Stiehl
Rusmin Soetjipto
Dan Zaharopol
Prof. Bruce Blumberg

AlphaWolf presents a synthetic wolf pack comprised of autonomous and semi-autonomous wolves who interact with each other much as real wolves do, forming dynamic social relationships based on their past experiences. How the wolves interact is determined by their internal state, their social positions in the pack, and their previous experiences with their pack-mates. Each of several participants can affect the emotional state of a wolf by howling, growling, or whimpering into a microphone. In addition, participants can encourage their wolves to interact with specific other wolves in the pack. By letting participants "get inside the mind and body" of a wolf, AlphaWolf provides a compelling opportunity to explore the meaning of social behavior.

This work is informed by the biology and behavior of the gray wolf (*Canis lupus*). In their natural environment, wolves form hierarchical social relationships within their packs. Certain individuals are dominant over other individuals. To demonstrate and maintain these relationships, wolves exhibit stereotypical dominance and submission behaviors toward each other. These social behaviors appear to be derived from other behavioral patterns exhibited by wolves. For example, the two main forms of submission in adult wolves (passive submission and active submission) are quite similar to two forms of pup behavior (reflex urination and food-begging). AlphaWolf explores the connections among social behavior, learning, emotion, and development in virtual wolves to create an entertaining interaction and shed some light on those connections in wild wolf populations.

Since most people interacting with AlphaWolf are novices, it's best to "play" wolf puppies in the beginning. As new additions to the pack, novices, and pups have about the same level of social skills. Just as puppies are tolerated by adult wolves when they behave in ways that are socially inappropriate, novice users should be welcomed into the system despite their limited knowledge of wolf social behavior. Virtual pups should learn at the same rate as the human interactors, so that the two are well matched as they proceed through the social environment together.

AlphaWolf represents the second year of a multi-year project by the Synthetic Characters Group at the MIT Media Lab under the direction of Bruce Blumberg. Through this project, we aim to develop autonomous animated characters whose behavioral complexity, ability to learn and adapt, expressivity, and intentionality rival those of a real dog or wolf. In addition to extending our previous work, AlphaWolf explores the computational representations that must be in place to enable social learning and formation of context-specific emotional memories. The installation showcases the minds and bodies of the wolves themselves and features a suite of supporting technology, including evocative real-time computer graphics, autonomous cinematography, and dynamic scoring and sound design.

The alpha wolf and his pup howl together.

The pup tries to convince the alpha wolf to play.

The pup submits to the alpha wolf.